


Subject	BIOLOGY	Grade	9	 COLEGIO COLOMBO BRITÁNICO
Student		Date		

ASSESSMENT TASK – PRACTICAL DESIGN (PENGUIN HUDDLING BEHAVIOUR)

For obvious practical (not to mention ethical) reasons, biological investigations often require the creation of a model. You will **design an experiment** to **investigate** the huddling behaviour of penguins in mating season. You will **present a lab report** that shows the following steps of the scientific method:

1. Research question – What are you going to investigate?
2. Hypothesis – Predict the outcome of your experiment. Provide a scientific explanation for this.
3. Variables – What are your *independent*, *dependent*, and *controlled* variables?
4. Materials – A detailed list of the materials required to perform your experiment
5. Method – A step-by-step guide to performing the experiment
6. Results – A properly formatted data table and graph(s) if needed
7. Conclusions – Describe and explain your results using empirical, scientific reasoning
8. Evaluation – Discuss the validity of your hypothesis based on the data you collected. How confident are you about whether to accept/reject the hypothesis? Why?
Discuss the validity of the method. Did you manipulate the variables so that it was a fair test?
Describe improvements that could be made to the experiment and further investigations into the subject.

The planning and execution of the experiment is in **pairs**, however the write up will be **individual**.

Your report will be presented physically or electronically as a word-processed document on letter-sized paper.

You will be graded on **Criteria B** and **C**.

CRITERIA AND ASSESSMENT RUBRICS**Criterion B: Inquiring and Design**

Level	Level descriptor	Student	Teacher
0	The student does not reach a standard described by any of the descriptors below.		
1-2	The student is able to: i. select a problem or question to be tested by a scientific investigation. ii. select a testable prediction. iii. state a variable. iv. design a method with limited success .		
3-4	The student is able to: i. state a problem or question to be tested by a scientific investigation. ii. state a testable prediction. iii. state how to manipulate the variables, and state how data will be collected. iv. design a safe method in which he/she selects materials and equipment .		
5-6	The student is able to: i. state a problem or question to be tested by a scientific investigation. ii. outline a testable prediction. iii. outline how to manipulate the variables, and state how relevant data will be collected. iv. design a complete and safe method in which he/she selects appropriate materials and equipment .		
7-8	The student is able to: i. outline a problem or question to be tested by a scientific investigation. ii. outline a testable prediction using scientific reasoning . iii. outline how to manipulate the variables, and outline how sufficient, relevant data will be collected. iv. design a logical, complete and safe method in which he/she selects appropriate materials and equipment .		

Criterion C: Inquiring and Design

Level	Level descriptor	Student	Teacher
-------	------------------	---------	---------

0	The student does not reach a standard described by any of the descriptors below.		
1-2	The student is able to: i. collect and present data in numerical and/or visual forms. ii. interpret data. iii. state the validity of a prediction based on the outcome of a scientific investigation, with limited success . iv. state the validity of the method based on the outcome of a scientific investigation, with limited success . v. state improvements or extensions to the method that would benefit the scientific investigation with limited success .		
3-4	The student is able to: i. correctly collect and present data in numerical and/or visual forms. ii. accurately interpret data and outline results . iii. state the validity of a prediction based on the outcome of a scientific investigation. iv. state the validity of the method based on the outcome of a scientific investigation. v. state improvements or extensions to the method that would benefit the scientific investigation.		
5-6	The student is able to: i. correctly collect, organize and present data in numerical and/or visual forms. ii. accurately interpret data and outline results using scientific reasoning . iii. outline the validity of a prediction based on the outcome of a scientific investigation. iv. outline the validity of the method based on the outcome of a scientific investigation. v. outline improvements or extensions to the method that would benefit the scientific investigation.		
7-8	The student is able to: i. correctly collect, organize, transform and present data in numerical and/or visual forms. ii. accurately interpret data and outline results using correct scientific reasoning . iii. discuss the validity of a prediction based on the outcome of a scientific investigation. iv. discuss the validity of the method based on the outcome of a scientific investigation. v. outline improvements or extensions to the method that would benefit the scientific investigation.		

Student Reflection

Teacher Feedback